

## Questions from IDEM October 25, 2017

Q1a: Can an owner/operator construct a new non-CCR surface impoundment in the location of a CCR surface impoundment that is in the process of being closed by removal – after all CCRs and areas that may have been contaminated by CCRs have been removed, however ground water monitoring concentrations exceed the GWPS?

*A (1a): Assuming all areas that have been affected by releases of CCRs have been removed and decontaminated, the CCR rule does not prohibit the construction of a non-CCR surface impoundment in the location, while closure by removal is progressing. However, as part of the process of conducting the closure by removal the facility must still comply with the requirement to meet the ground water protection standards within the timeframes prescribed in §257.102(f). Consequently, the owner/operator must ensure that construction of the new non-CCR unit does not impact the ability to meet the closure requirements for the CCR surface impoundment.*

Q1b: Would this action be considered a retrofit under §257.102(k)?

*A (1b): Because they do not intend to construct or operate a CCR unit, this action would not be considered a retrofit under §257.102(k). If the unit is retrofitted, per the requirements under §257.102(k), the new unit would need to be designed as a new CCR surface impoundment and all aspects of the rule would apply to the new unit, including the full post closure care period.*

Q2: Can closure by removal of CCRs for an existing surface impoundment be certified, as required by § 257.102(f)(3), without confirmation that the ground water monitoring concentrations do not exceed the groundwater protection standard for constituents in Appendix IV?

*A: No, the performance standard for closure by removal requires that groundwater monitoring indicates that the concentrations of constituents do not exceed the groundwater protection standard for constituents listed in Appendix IV. According to § 257.102(f)(2), the maximum time an owner/operator has to complete closure and meet the ground water protection standard is 7 years for surface impoundments 40 acres or smaller and 15 years for surface impoundments larger than 40 acres. Closure is not considered complete until all CCR in the unit and any areas affected by releases from the CCR unit have been removed **and** groundwater monitoring demonstrates that all concentrations of the assessment monitoring constituents listed in appendix IV to part 257 do not exceed the groundwater protection standards. §257.102(c); 80 FR 21412, April 17, 2015.*

Q3: In clean closing, does the owner/operator (O/O) have to certify that any soil affected by releases from the CCR unit have been removed?

*A: Yes. The regulation specifies that “An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit.” §257.102(c). As part of attaining the performance standard for clean closure, the O/O will need to document*

*that CCR has been removed and that decontamination is complete § 257.102(f)(3). The regulation also specifies that decontamination is complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standards. § 257.102(c). While part 257 does not require any particular documentation of soil testing, the state can require soil testing as part of the required documentation. Upon completion of closure activities, the O/O of the CCR unit must obtain a certification from a qualified PE verifying that closure has been completed in accordance with the closure plan and the requirements of §257.102.*

Q4(a): What does the Agency mean by “infiltration” in §257.102(d), the performance standard for CCR units closing with waste in place?

*A(4a): The word “infiltration” in §257.102(d)(1)(i) is a general term that refers to any kind of movement of liquids into the waste unit. That would include any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the bottom of the unit.*

*Part 257.102(d) states that:*

*Closure performance standard when leaving CCR in place. (1) The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:*

- (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure **infiltration** of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;*
- (ii) Preclude the probability of future impoundment of water, sediment, or slurry;*
- (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;*
- (iv) Minimize the need for further maintenance of the CCR unit; and*
- (v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.*

*Reading further in the regulation, you can see that §257.102(d)(3) goes on to provide more specific information about the requirements for the final cover system. That paragraph (i.e., §257.102(d)(3) is specifically referring to infiltration from the top of the unit, which is to be prevented by an adequate final cover system.*

Q4(b) Does “ground” in 257.102(d)(1)(i) mean ground or ground water?

*A(4b): In §257.102(d)(1)(i), “contaminated run-off to the ground or surface waters...” means contaminated run-off to the ground water or surface waters. The phrase is “to the ground or surface waters or to the atmosphere....;” in other words, EPA grouped “ground or surface water” as one item.*

Q4(c) Can the Agency give an example of what factors should be taken into account in determining “the maximum extent feasible”?

*A(4c): The regulation does not dictate a particular method by which a facility must demonstrate that the facility has “controlled, minimized or eliminated, to the maximum extent feasible...” One example would be a CCR surface impoundment that extends into the ground water table will face the challenge of addressing infiltration of both surface water and ground water. One engineering set of solutions that may meet the standard of controlling and minimizing to the maximum extent feasible would be to 1) dewater the surficial impounded water sufficient to support an adequate cover system; and 2) for the groundwater infiltration into the bottom of the unit, isolate the waste management unit from the groundwater system with a slurry wall and maintain groundwater gradients away from the waste through a pump and treat system. The simplest way for an O/O to document that they have “controlled, minimized or eliminated, to the maximum extent feasible...” would be for the facility to present an analysis of different closure options and different techniques to achieve this standard. At a minimum the facility would need to document the measures they had taken to meet the performance standard and explain why these measures met the regulatory standard, based on the site and unit characteristics.*

Q5: What was the intent of the Agency in revising the Q & A on closure located on the EPA’s CCR website [ [HYPERLINK "https://www.epa.gov/coalash/relationship-between-resource-conservation-and-recovery-acts-coal-combustion-residuals-rule%20"](https://www.epa.gov/coalash/relationship-between-resource-conservation-and-recovery-acts-coal-combustion-residuals-rule%20) ] (**what are the options and the performance standards for closure of units under the CCR rule?**)? What is the result of that change? Why was the example removed?

*A: The revised Q&A in no way altered or modified the regulatory closure standards. Both the original and revised Q&A unequivocally state: “the facility must meet all of the performance standards for the closure option it has selected, and if it cannot meet all of the performance standards for one option, then it must meet all of the performance standards for the other option. For example, if the facility is unable to meet the performance standards for closure with waste in place for a particular unit (or portion of a unit), it must clean close the unit (or that portion).”*

*The revision was intended to clarify the following:” If the performance standards for clean closure and the performance standards for closure with waste in place can be met, an owner or operator may determine which alternative is appropriate for their particular unit. A facility also may choose to clean close a portion of a single unit and close the remainder of that unit with waste in place.”*

Q6: What does the Agency mean by “background” in §257.91(a)(1)?

*A: The owner/operator (O/O) must select wells for the determination of background levels of constituents that not have been affected by leakage from any CCR unit. § 257.91(a)(1).*

*Two points are relevant here: 1. The onus remains on the O/O to demonstrate that this performance standard has been met. 2. This includes leakage from any source of CCRs, including from any CCR that may have been located on the facility. Consequently, if the levels*

*of regulated constituents are higher than would normally expected to be found in uncontaminated aquifers, the onus is on the O/O to demonstrate that the contamination has not come from the CCR unit. See also, e.g., 40 CFR 257.91(f), 257.105(h)(3).*

*Generally, in groundwater monitoring, the objective of background monitoring is to develop levels that represent groundwater that has not been contaminated by CCR while at the same time taking into consideration that both naturally occurring and anthropogenic sources of contamination if not considered could be misinterpreted as arising from CCRs. Some further guidance is discussed in the preamble to the final rule at 80 Fed Reg 21,400-21,401, along with references to more detailed technical guidance. As described in the “Technical Manual Solid Waste Disposal Facility Criteria”, EPA530-R-93-017, USEPA, November, 1993, Chapter 5, Subpart E, Ground-Water Monitoring and Corrective Action, “The most important quality of background is that it reflects the historical conditions unaffected by the activities it is designed to be compared to. These conditions could range from an uncontaminated aquifer to an historically contaminated site baseline unaffected by recent RCRA-actionable contaminant releases. Representative background data will therefore have numerical characteristics closely matching those arising from the site-specific aquifer being evaluated.”*

*The Unified Guidance also includes the following definition: **Background** - Natural or baseline groundwater quality at a site; can be characterized by upgradient, historical, or sometimes sidegradient water quality.*

*Further, the Unified Guidance recommends that upgradient background wells be located beyond the upgradient extent of potential contamination. Where hydrologic conditions do not allow identification of wells which are hydraulically upgradient (e.g., floodplains, where nearby surface water can influence groundwater), background groundwater quality may be determined from wells that are not upgradient as long as they provide samples as representative or more representative of background than the upgradient wells.*

*Determining background groundwater quality by sampling wells that are not hydraulically upgradient may be necessary where hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient (e.g., floodplains, where nearby surface water can influence groundwater). In such cases, the rule allows the owner or operator to establish groundwater quality at existing units by locating wells that are not upgradient under certain conditions (§ 257.91(a)(1)). This provision may be used when hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient and when sampling at other wells will provide data establishing background groundwater quality that is equally or more representative than that provided by upgradient wells. These conditions could include one or more of the following:*

- The facility is located above an aquifer in which groundwater flow directions change seasonally.*
- The facility is located near production wells that influence the direction of groundwater flow.*
- The proposed or existing CCR disposal unit overlies a groundwater divide or local source of recharge.*

- *Geologic units present at downgradient locations are absent at upgradient locations.*
- *Karst terrain or fault zones modify flow.*
- *Nearby surface water (i.e., river) influences groundwater flow directions.*

*Additionally, there is nothing in the rule that would prevent the owner or operator from monitoring multiple aquifers in addition to the uppermost significant aquifer. Certain site conditions warrant more extensive monitoring requirements, as discussed in “Technical Manual Solid Waste Disposal Facility Criteria”, EPA530-R-93-017, USEPA, November, 1993, Chapter 5, Subpart E, Ground-Water Monitoring and Corrective Action.*

*Finally, the Agency recognizes that there are situations where intra-well analyses are appropriate. Intra-well comparisons, including the use of trend graphs, where data of one well are evaluated over time, are useful in evaluating trends in individual wells and for identifying seasonal effects in the data. The intra-well comparison methods do not compare background data to compliance data and if the wells being used for the intra-well comparisons are already substantially contaminated by CCR releases or other sources they may not show a trend of getting worse over time. However, if an existing facility does not have valid background data, intra-well comparisons may represent the only comparison available. Thus, the rules provide for this situation. However, in the absence of a true background well, several monitoring events may be required to determine trends and seasonal fluctuations in ground-water quality. More detail can be found in the “Technical Manual Solid Waste Disposal Facility Criteria,” EPA530-R-93-017, USEPA, November, 1993, Chapter 5, Subpart E, Ground-Water Monitoring and Corrective Action, and the “Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities,” March 2009, EPA 530/R-09-007.*